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Understanding the Waste Report

www.ncagr.com/agronomi/uyrpws.htm

Steve Troxler, Commissioner of Agriculture

Waste products can provide essential plant nutrients to growing crops as well as improve soil physical properties, such as water drainage, infiltration and holding capacity. Waste products must be applied at agronomic rates and in ways that protect the environment.

Sample Information This section contains the sample identifier, waste code and description as supplied by the grower on the *Waste Sample Information* form.

Laboratory Results Waste analysis assesses the value of the tested material as a substitute for commercial fertilizer. It measures concentrations (ppm) of 11 essential plant nutrients (N, P, K, Ca, Mg, S, Fe, Mn, Zn, Cu, B). Na concentration is also routinely provided since it can accumulate in waste materials to levels that are detrimental to soil physical properties and plant production. Upon request, concentrations of two other essential nutrients (Mo and Cl) are provided if they are of concern to the user.

pH (provided for liquid lagoon samples) should be 7.5–8.0 for optimum digestion of organic material by anaerobic bacteria.

DM% (provided for all solid waste samples) is needed to convert the concentrations in ppm (on a dry basis) back to the wet basis (or moisture consistency) at which the material was received since solid waste samples are dried before processing.

C, C:N, pH and SS (provided for all waste samples coded as composted materials) are valuable indicators of the material's suitability for the composting process or for use as a plant growth substrate. The ideal C:N ratio for composting is 20–30. The optimal pH range for plant growth is 5.5–6.5. An SS value (electrical conductivity in 10^{-5} Siemens/cm) < 70 is desirable if the material is to be used as a plant growth substrate.

CCE% and ALE (provided ***by special request only***) indicate the waste's value as a substitute for agricultural lime.

Cd, Ni and Pb (provided ***by special request only*** for wastes from municipal or industrial operations) may indicate an environmental hazard. The N.C. Department of Environment and Natural Resources Division of Water Quality has established maximum cumulative pollutant loading rates and ceiling concentrations for these elements to protect environmental quality.

NO_3-N, NH_4-N and Urea (provided ***by special request only***) indicate degree of mineralization of organic material. The proportion of NO_3-N to NH_4-N is often important in crop production research.

Recommendations Predictions of nutrients available for the first crop are based on the type of waste and the method of application. If you decide to change the application method after receiving your report, contact the Agronomic Division for a revised recommendation.

Approximately 40–80% of nutrients become available within the first year of application. Applying wastes near planting time is recommended to maximize uptake and reduce environmental impact. Remaining nutrients either become available gradually or combine with soil constituents and become unavailable. Mineralization to available forms may occur over many years. Nutrients like Zn and Cu can accumulate in the soil in significant quantities. If waste is routinely applied, monitor nutrient accumulations with soil tests *at least* once every two years. Some cropping systems and metal levels may necessitate annual soil sampling.

Report Abbreviations

ALE	Ag lime equivalent
B	Boron
C	Carbon
C:N	Carbon-nitrogen ratio
Ca	Calcium
CCE%	$CaCO_3$ equivalence
Cd	Cadmium
Cl	Chloride
Cu	Copper
DM%	Percent dry matter
Fe	Iron
IN-N	Inorganic nitrogen
K	Potassium
K_2O	Potash
Mg	Magnesium
Mn	Manganese
Mo	Molybdenum
N	Nitrogen
Na	Sodium
NH_4-N	Ammonium nitrogen
Ni	Nickel
NO_3-N	Nitrate nitrogen
OR-N	Organic nitrogen
P	Phosphorus
Pb	Lead
P_2O_5	Phosphate
pH	Scale of acidity/alkalinity
ppm	Parts per million
S	Sulfur
SS	Soluble salts
T	Trace quantity (<0.005 lb/unit)
Zn	Zinc

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